Early Transition and Use of VIIRS and GOES-R Products by NWS Forecast Offices

AMS – 8th Annual Symposium on Future Operational Environmental Satellite systems: Session 5

25 January 2012

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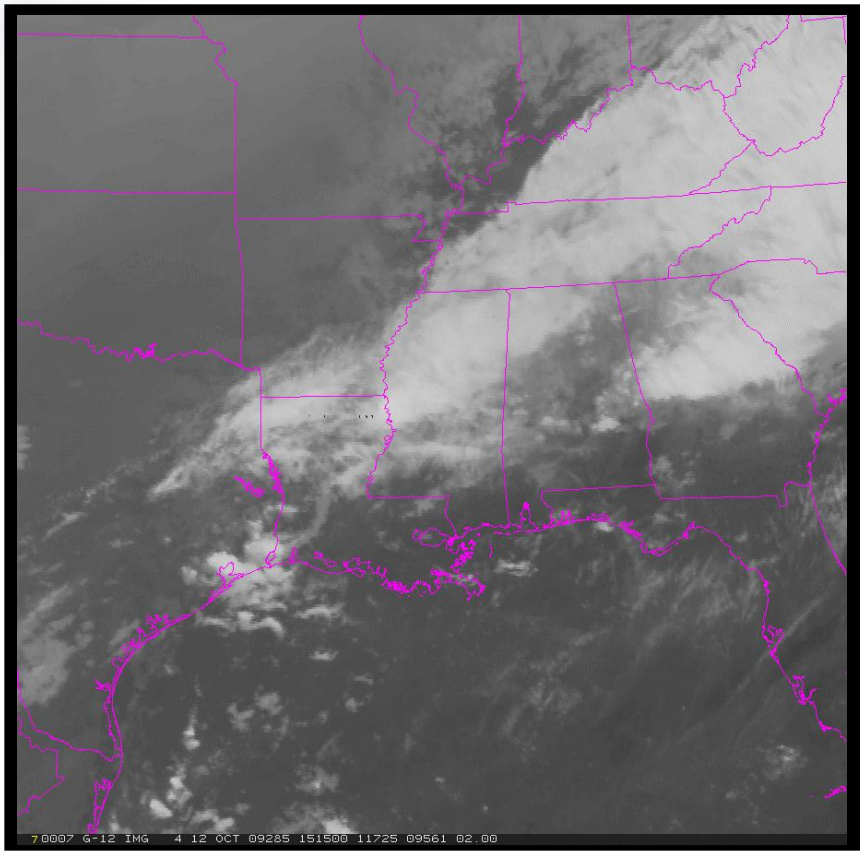
The Future Brings Change

- We like what we like
  - Coffee, gas station, grocery, hair cut, vacation spot
  - Satellite Imagery ~ broad scale analysis
- Change: “Step outside your comfort zone”



NASA/SPoRT

Short-term Prediction, Research and Transition

- Focused on demonstrating the utility of NASA and future NOAA data for improving short-term wx forecasts
- Proven paradigm for research to operations (R2O), and O2R
- Work collaboratively with selected WFOs to test and transition
- Receives funding from NASA and NOAA
- Recognized as the “go to” place for transition to operations
- Endorsed by NWS ESSD/SSD chiefs

SPoRT Products and Partners

Situational Awareness

- MODIS Imagery, Derived Products
- Lightning Mapping Array
- GOES Imager/Sounder (SPoRT, CIRA, NESDIS)
- WindSat (NRL)

Modeling

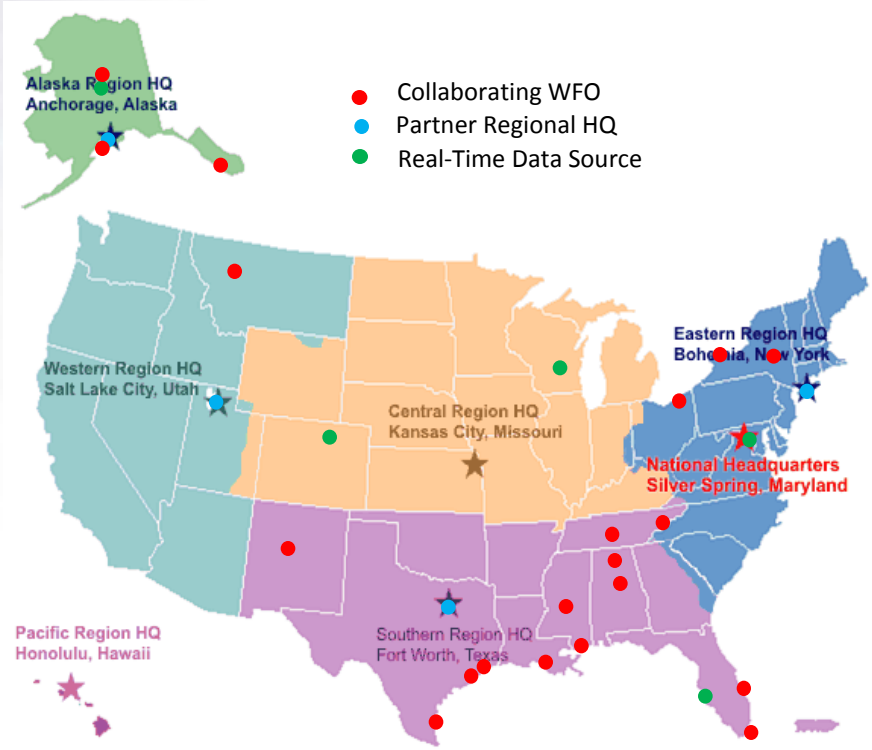
- WRF-EMS Initialization of surface fields via MODIS SST and Vegetation Fraction
- SPoRT WRF

Data Assimilation

- AIRS radiances, profiles of T and q

Transition

- AWIPS, AWIPS II, NAWIPS, KML, GeoTIFF
- Web-based training modules (in NOAA/LMS)
- Intensive Observing Periods (IOPs) with WFOs

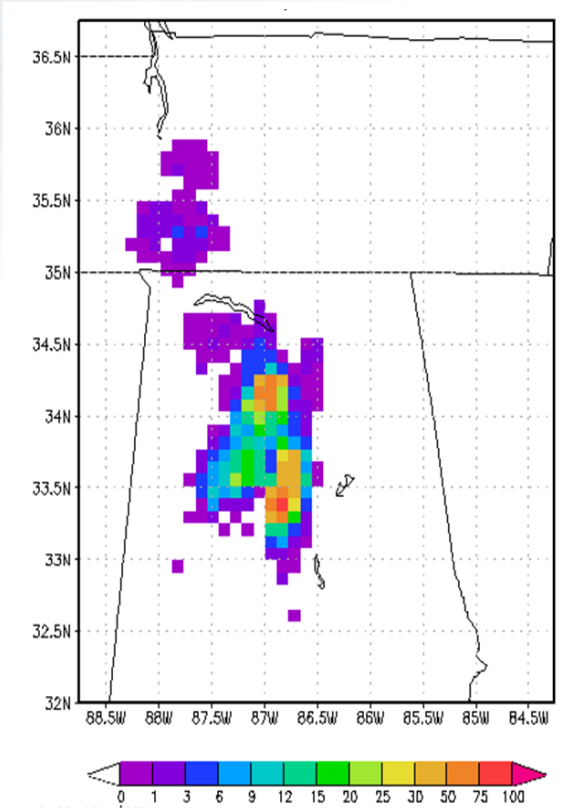


SPoRT website
http://weather.msfc.nasa.gov/sport
Wide World of SPoRT Blog
http://www.nsstc.uah.edu/sportblog/
Collaborative discussion on Facebook
http://www.facebook.com/NASA.SPoRT

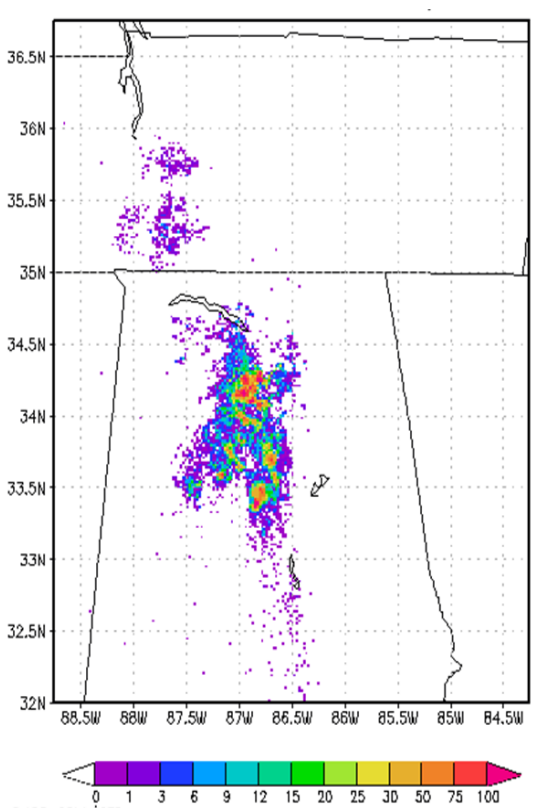
Total Lightning, Pseudo-GLM GOES-R

- Need a GLM-like product as a tool for user training
- P-GLM uses ground-based networks and GLM resolution
- SPoRT providing to HWT from 3 networks

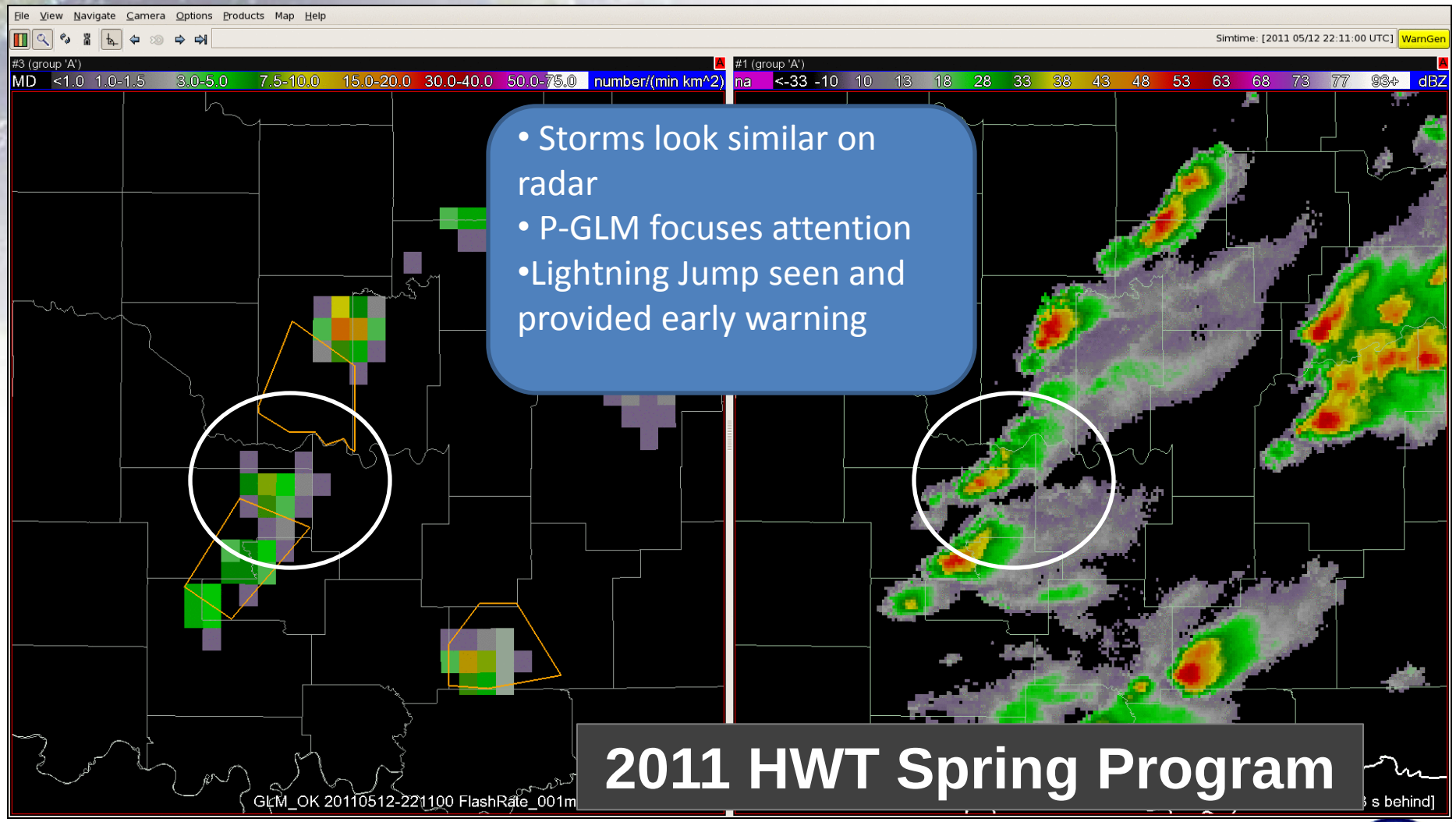
Pseudo GLM
Flash Extent Density



NALMA Ground-based
Source Density

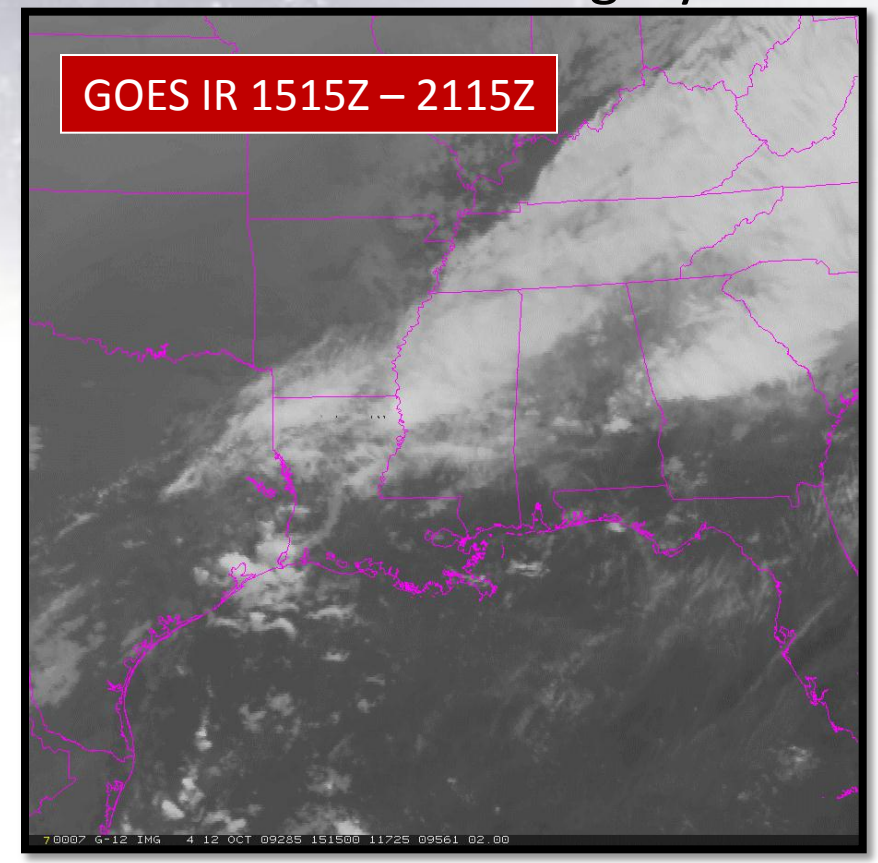


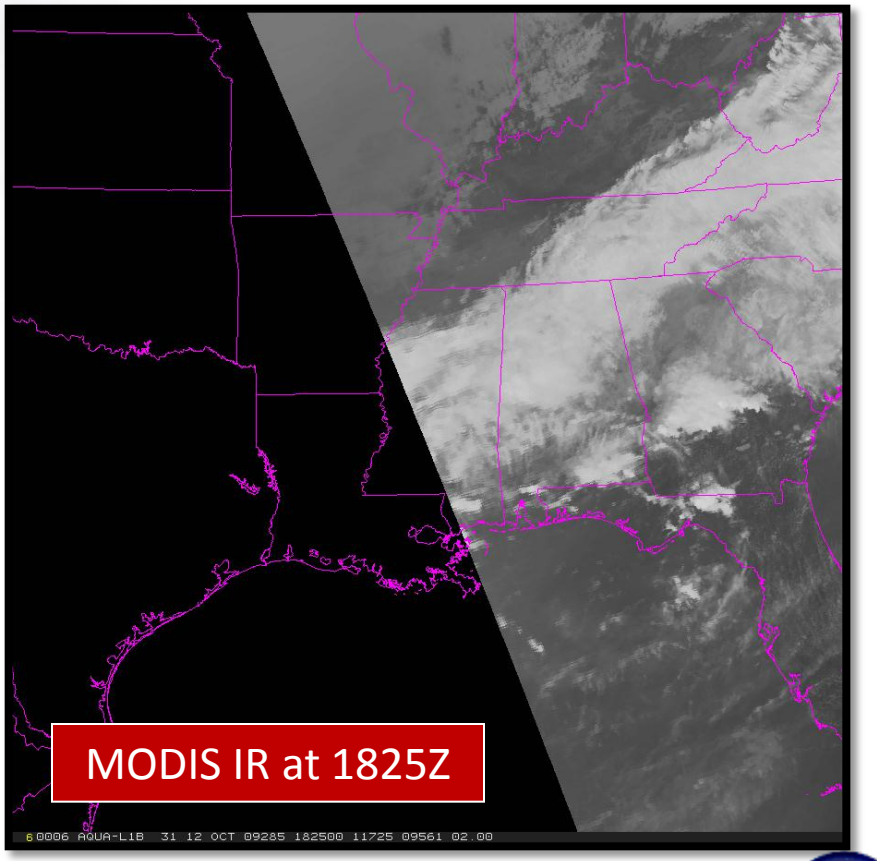
Pseudo-GLM Example



Hybrid Imagery (LEO/GEO)
GOES-R PG - ABI

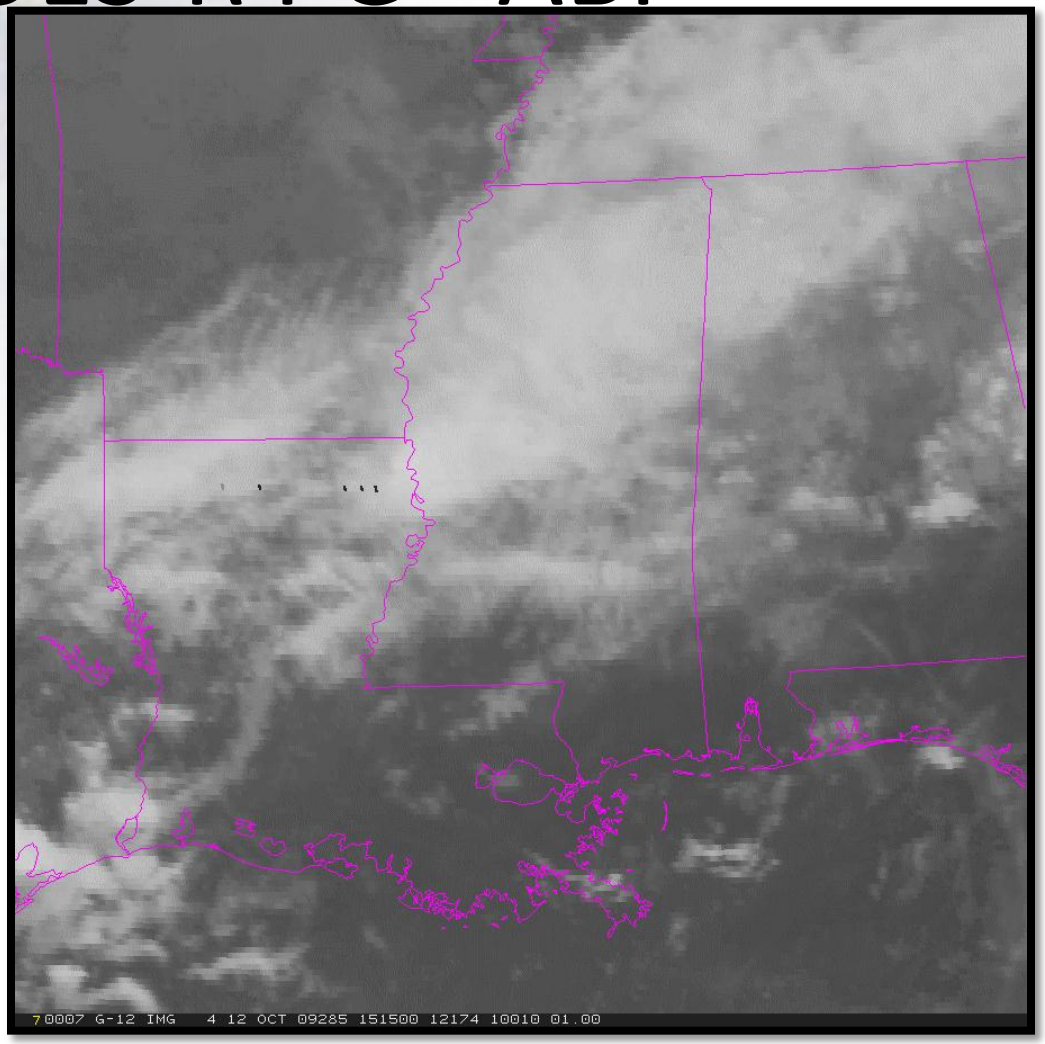
- Single MODIS image to better interpret features in the more coarse GOES imagery. This had been the mantra.



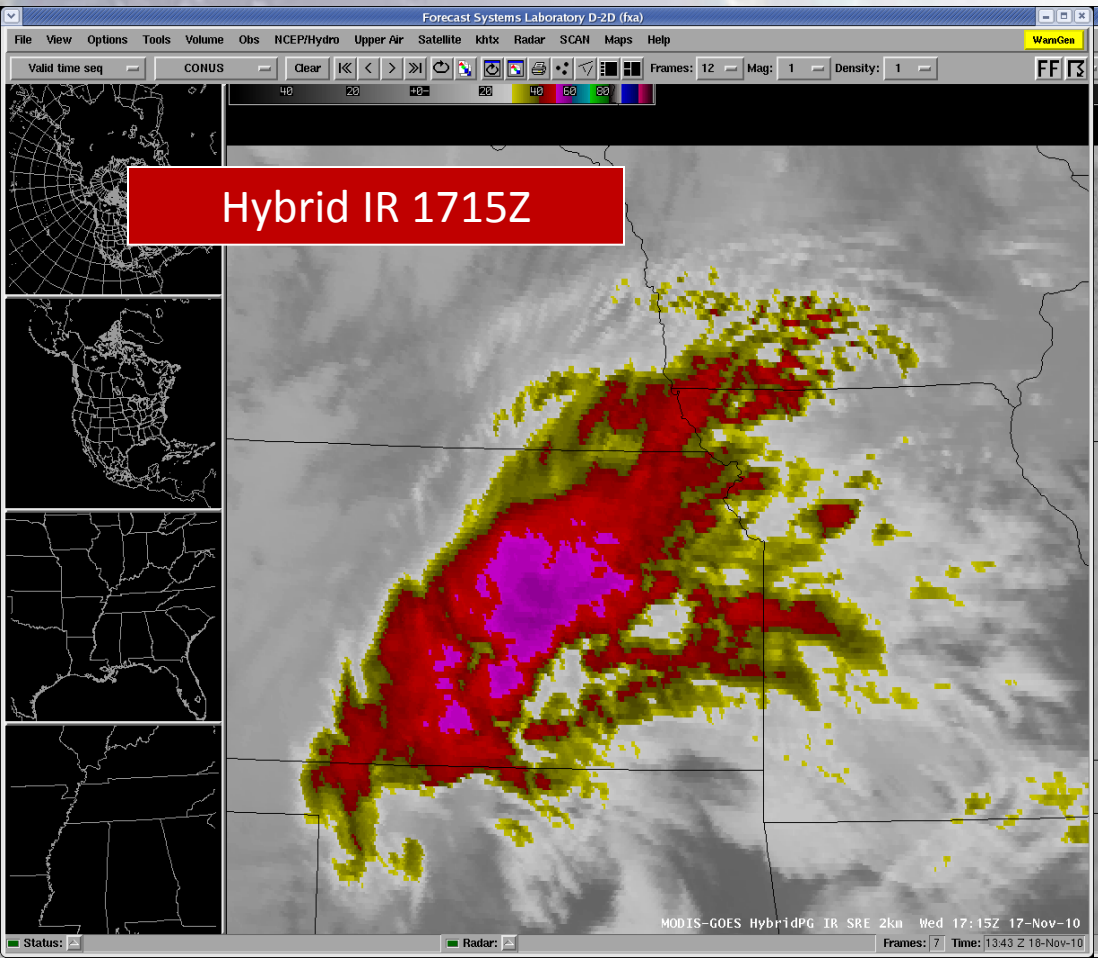


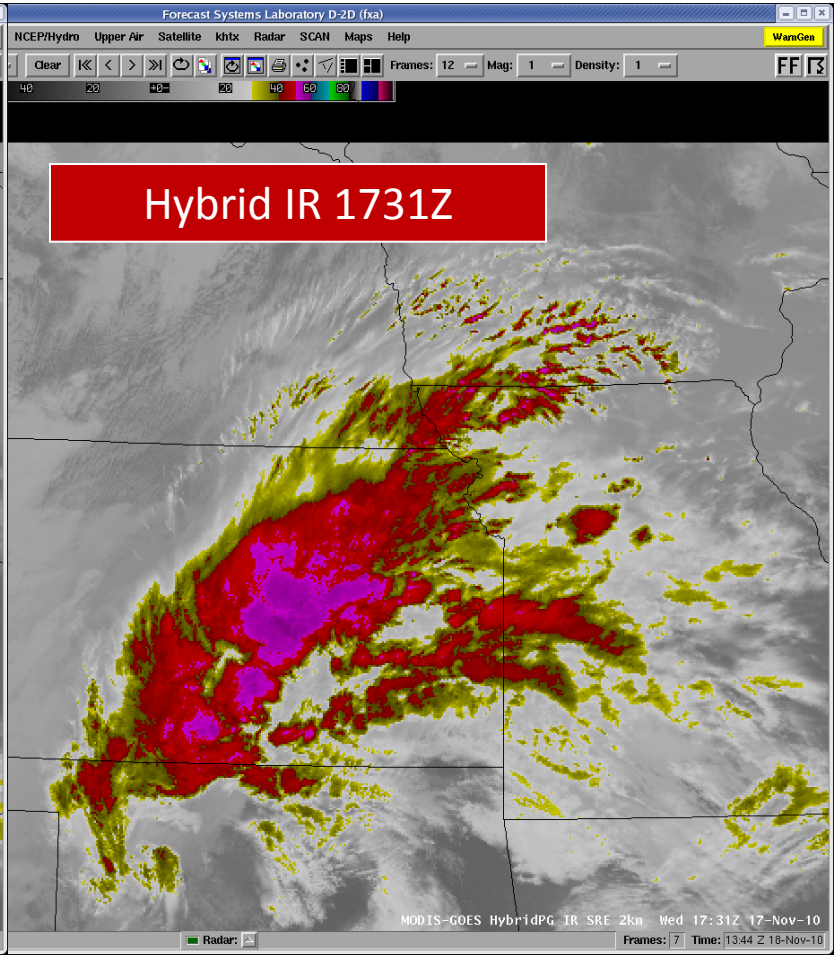
Hybrid Imagery (LEO/GEO)
GOES-R PG - ABI

Hybrid IR
1515Z-2115Z,
Oct 12



Hybrid Imagery (LEO/GEO)
GOES-R PG - ABI



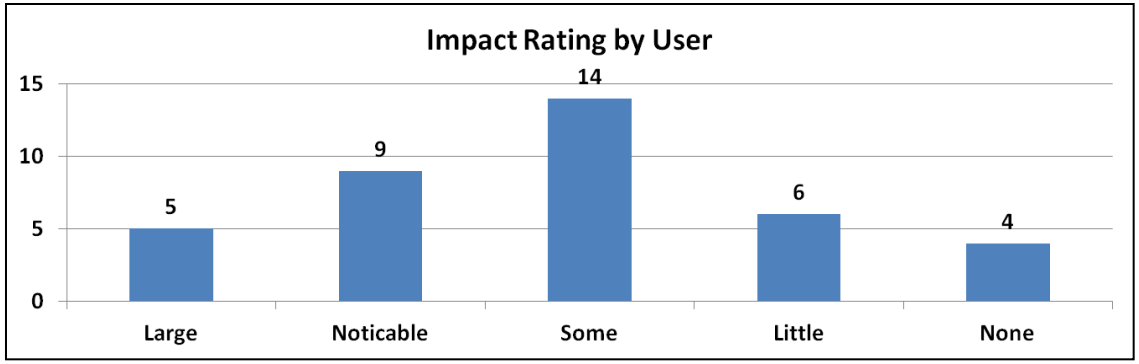


Hybrid Imagery – Evaluation GOES-R PG

- 38 feedback submissions
- 28 recommended hybrid to others
- Each product at 13+ reviews with vis. getting the most
- ~2/3 zoomed in to see details vs. broad view
- Contributions from all 8 PG WFOs & SMG

User Application Comments:

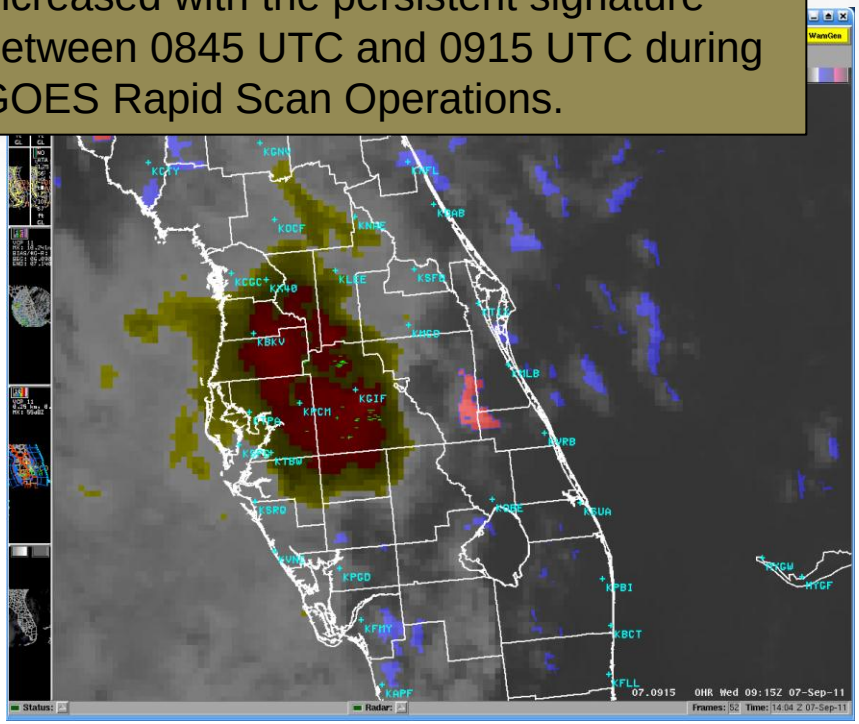
- *Bettter identification of cold cloud top area/structure*
- *Enhanced view of blowing dust*
- *Improved spatial definition of fire hot spots and smoke*
- *Improved location and orientation of approaching fronts*
- *Better cloud coverage and structure in vis.*



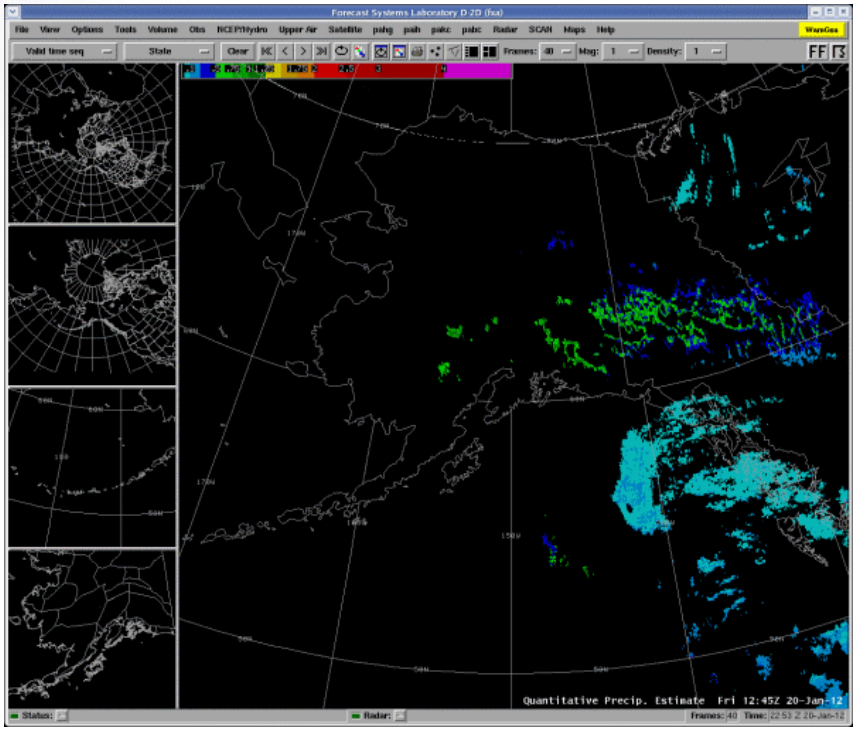
Assist AWGs with Transition GOES-R PG

University of Alabama-Huntsville
Convective Initiation

Nocturnal case from MLB: Confidence for CI was not specific to any one feature, but increased with the persistent signature between 0845 UTC and 0915 UTC during GOES Rapid Scan Operations.



NESDIS
Quantitative Precipitation Estimate



VIIRS – SPoRT Plans

- Direct broadcast ingest
  - GINA (Univ. AK Fairbanks), UW/CIMSS
- Additional EDRs from NESDIS
- Focus on particular WFO / National Center Challenges
  - Convection and aviation by extending MODIS applications
  - Marine issues and local surface forcing issues
  - Application of new channels to these forecast issues (e.g., DNB, RGBs, etc.)
- Leverage SPoRT expertise and resources with MODIS to more rapidly bring VIIRS to WFO level.
- Develop training as appropriate, similar to MODIS efforts
- Coordinated effort with WFOs for an intensive evaluation period for VIIRS products (feedback via web, blogs, cases)

VIIRS

Products for Dissemination
- Single Channels
- Snow properties
- Sea ice
- Ocean Color / SST
- Additional NESDIS EDRs

Products for Development
- Multi-channel composites using DNB
- RGB Composites
- Hybrid imagery concept

McIDAS V: 0815-0823Z, 19 January SVI05 channel (11µm)

Summary

GOES-R PG and VIIRS Transition Activities with WFOs

- Continue to provide Pseudo-GLM to HWT to prepare forecasters and obtain input for developers to create derived products
- Expand use of hybrid (GEO/LEO) imagery to demonstrate ABI capabilities in near-realtime
- Transition VIIRS SDRs/EDRs to WFOs using similar MODIS paradigm (match product w issue, AWIPS II, hybrid)
- Exploit new VIIRS capabilities: Day-Night Band, w/ RGBs
- VIIRS Training and Evaluations

"The most important single ingredient in the formula of success is knowing how to get along with people." – Theodore Roosevelt

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